Profile of Solitary Plasmacytoma-A Ten Year Data on Outcomes From A Tertiary Care Cancer Centre of Kashmir (India) .

Mushtaq Ahmad Sofi , Mohmad Hussain Mir , Farhana Siraj , Shahida Nasreen , Asifa Andleeb , Kaneez Fatima , Nazir Ahmad Dar , Musaib Mushtaq .

Abstract

Background

Solitary plasmacytoma, comprising solitary bone plasmacytoma (SBP) and extramedullary plasmacytoma (EMP), is a rare plasma cell neoplasm with a significant risk of progression to multiple myeloma (MM). This study evaluates clinicodemographic characteristics, treatment outcomes, and prognostic factors influencing disease progression.

Methods

A retrospective analysis of 24 patients diagnosed with plasmacytoma (SBP = 18; EMP = 6) was performed at SKIMS Srinagar. Clinical features, treatment modalities, response rates, and survival outcomes were assessed. Event-free survival (EFS), overall survival (OS), and progression to MM were analyzed, along with potential prognostic factors.

Results

The median age was 48 years with a male predominance (70.8%). Radiotherapy was the primary treatment modality. Local control was achieved in 87.5% of patients. During a median follow-up of 32 months, 33% of patients progressed to multiple myeloma (MM), predominantly in the SBP subgroup. Median time to progression was 21 months. Median EFS and OS were 38 and 122 months, respectively, with 5-year EFS of 45.5%. Local control was significantly associated with improved EFS (p = 0.001), while vertebral involvement showed a borderline association with progression (p = 0.057). Serum M protein status did not significantly impact outcomes.

Conclusion

Radiotherapy achieves high local control in solitary plasmacytoma; however, progression to multiple myeloma remains a significant risk, especially in patients with bone involvement and larger tumor burden. Optimal local control is a key prognostic determinant, emphasizing the importance of effective initial therapy and close long-term surveillance.

JK-Practitioner2026;31(2):16-20.

Introduction

Solitary plasmacytoma is a rare and distinct plasma cell neoplasm characterized by a localized proliferation of monoclonal plasma cells in the absence of systemic manifestations of multiple myeloma. It is broadly categorized into solitary bone plasmacytoma (SBP) and extramedullary plasmacytoma (EMP), depending on whether the lesion arises within bone or soft tissue. Although these entities share a common clonal origin, they differ in anatomical distribution, biological behavior, and risk of progression to systemic disease[1].Solitary Plasmacytomas account for approximately 3–5% of all plasma cell dyscrasias. SBP is more frequently encountered and predominantly involves the axial skeleton, particularly vertebrae, pelvis, and ribs, reflecting areas of active hematopoiesis. In contrast, EMP most commonly arises in the head and neck region, especially within the upper aerodigestive tract, including the nasal cavity, nasopharynx, and oropharynx. The disease typically presents in the fifth to seventh decade of life, with a clear male predominance[2]. The pathogenesis of solitary plasmacytoma involves clonal expansion of plasma cells, often associated with cytogenetic abnormalities similar to those seen in multiple myeloma, such as immunoglobulin heavy chain translocations. However, unlike multiple myeloma,solitary plasmacytoma

Author Affiliations

Mushtaq Ahmad Sofi ,Shahida Nasreen, Asifa Andleeb , Kaneez Fatima , Nazir Ahmad Dar , Musaib Mushtaq ;
Department of Radiation Oncology:
Mohmad Hussain Mir; Department of Medical Oncology: DR **Farhana Siraj** :
Department of General Medicine
SKIMS SOURA

Correspondence

Dr. Mohmad Hussain Mir
Assistant Professor
Medical Oncology SKIMS Soura
Contact: 9419023962
Email: mhussainmir@gmail.com

Indexed

EMBASE, SCOPUS, IndMED , ESBCO, Google Scholar besides other national and international databases.

Cite this article as

Sofi MA , Mir MH , Siraj F , Nasreen S , Andleeb A , Fatima K, Dar NA , Mushtaq M. Profile of Solitary Plasmacytoma-A Ten Year Data on Outcomes From a Tertiary Care Cancer Centre of Kashmir (India). JK Pract2026;31(2):16-20.

Full length article available at **jkpractitioner.com** one month after publication

Keywords

Solitary plasmacytoma, radiotherapy, multiple myeloma, event-free survival, prognostic factors

lacks diffuse bone marrow involvement and does not fulfill the diagnostic criteria of systemic disease, including CRAB features like hypercalcemia, renal impairment, anemia, or multiple osteolytic lesions. The distinction between localized plasmacytoma and early multiple myeloma is critical, as it directly influences therapeutic strategy and prognosis3.Accurate diagnosis requires a comprehensive workup, including histopathological confirmation of monoclonal plasma cell infiltration and thorough systemic evaluation to exclude disseminated disease. Bone marrow examination typically reveals minimal or absent clonal plasma cells (<10%). Advanced imaging modalities such as magnetic resonance imaging (MRI) and fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT)or low dose whole body computed tomography have become integral in staging, as they improve detection of occult lesions and reduce the risk of understaging. Radiotherapy remains the cornerstone of treatment for both SBP and EMP due to the intrinsic radiosensitivity of plasma cells. Definitive radiotherapy with doses ranging from 40 to 50 Gy achieves excellent local control rates, often exceeding 80–90%. Surgical intervention may be considered in selected cases, particularly for structural stabilization or complete excision of localized extramedullary lesions. The role of systemic therapy remains limited and is generally reserved for patients with high-risk features or disease progression4. Despite favorable local control, solitary plasmacytoma carries a significant risk of progression to multiple myeloma, particularly in patients with SBP. Long-term follow-up studies have demonstrated progression rates of up to 50–70% over a decade. Several prognostic factors have been identified, including tumor size, persistence of monoclonal protein after treatment, and minimal bone marrow involvement at diagnosis. These factors underscore the importance of vigilant surveillance even after successful local therapy5.Given the rarity of this disease, most available evidence is derived from retrospective analyses and institutional experiences, resulting in variability in diagnostic approaches and treatment strategies. There remains a need for further studies to better delineate prognostic factors, optimize therapeutic protocols, and improve long-term outcomes.In this context, the present study aims to evaluate the Clinicopathological characteristics, treatment patterns, and outcomes of patients with solitary plasmacytoma treated at a tertiary care center, thereby contributing to the existing body of evidence and providing insights into real-world clinical practice.

Study Design and Methodology

This retrospective observational clinicodemographic study was conducted at SKIMS Soura (a tertiary care oncology center) to evaluate the demographic profile, clinical characteristics, treatment patterns, and outcomes of patients with solitary plasmacytoma. All consecutive cases diagnosed between January 2016-Dec 2025 were identified from state cancer institutional medical records. Ethical approval was obtained from the Institutional Ethics Committee, and the study was conducted in accordance with the Declaration of Helsinki. Adult patients (≥18 years) with histologically confirmed solitary plasmacytoma, including solitary bone plasmacytoma and extramedullary plasmacytoma, were included. Diagnosis required exclusion of multiple myeloma, defined by bone marrow plasma cells <10%, absence of CRAB features (hypercalcemia, renal dysfunction, anemia, lytic bone lesions), and no additional lesions on imaging (skeletal survey/MRI/PET-CT). Only patients with complete baseline data and who received definitive treatment (radiotherapy ± surgery) were analyzed. Patients with multiple myeloma at presentation, multiple lesions, prior plasma cell dyscrasia, incomplete records, or inadequate follow-up were excluded. Data were extracted using a structured proforma, including demographic variables (age, gender), clinical features (symptoms, ECOG performance status, disease site), diagnostic findings (imaging, laboratory parameters including serum protein electrophoresis and immunofixation, bone marrow biopsy), and treatment details (radiotherapy dose, fractionation, technique, and surgical intervention). Outcome measures included local control, progression to multiple myeloma, progression-free survival (PFS), and overall survival (OS). Statistical analysis was performed using SPSS software. Continuous variables were expressed as mean ± standard deviation or median (range), and categorical variables as frequencies and percentages. Survival outcomes were estimated using the Kaplan–Meier method, with subgroup comparisons performed using the log-rank test. A p-value <0.05 was considered statistically significant. Patient confidentiality was maintained through data anonymization.

Results

A total of 24 patients with plasmacytoma were analyzed, comprising 18 cases of solitary bone plasmacytoma (SBP) and 6 cases of extramedullary plasmacytoma (EMP). The mean age at presentation was 48 years, with a male predominance (70.8%). The majority of patients belonged to rural areas (60.0%). Pain was the most common presenting symptom (54.2%), followed by swelling/mass and neurological weakness. No statistically significant differences were

observed between SBP and EMP groups in baseline characteristics.Radiotherapy (RT) alone was the predominant treatment modality (79.16%), while a minority underwent surgery with or without adjuvant radiotherapy (Table 1). Overall, local control was achieved in 21 patients (87.5%), whereas 3 patients (12.5%) experienced local failure. All patients with local failure had bone plasmacytoma and tumor size ≥5 cm, and 66.7% of these patients progressed to multiple myeloma (Table 2).

Table 1. Baseline and Clinical Characteristics of Plasmacytoma Patients (N = 24)

Variable	Overall (N=24)	SBP (n=18)	EMP (n=6)	p-value*
Age (years), mean (SD)	48	48	50	0.68
Gender, n (%)				0.65
- Male	17 (70.8)	13 (72.2)	4 (66.7)	
- Female	7 (29.2)	5 (27.8)	2 (33.3)	
Residence, n (%)				0.99
- Rural	14 (60.0)	10 (55.5)	4 (66.6)	
- Urban	10 (40.0)	8 (44.4)	2 (33.3)	
Presenting symptom, n (%)				0.46
- Pain	13 (54.2)	11 (61.1)	2 (33.3)	
- Swelling/mass	3 (12.5)	1 (5.6)	2 (33.3)	
- Weakness	3 (12.5)	3 (16.7)	0 (0.0)	
- Nasal bleeding	2 (8.3)	0 (0.0)	2 (33.3)	
- Other / unknown	3 (12.5)	3 (16.7)	0 (0.0)	
Treatment Given, n				
- RT alone	19(79.16)	15(83.33)	4(66.6)	<0.001
- Surgery ± RT	5(20.83)	3 (16.66)	2(40.0)	

(12.5%) were recorded, of which 2 were disease-related (Table 7).

Table 2: Treatment Response and Local Control (n = 24)

Parameter	Number (n)	Percentage (%)
Achieved Local Control	21	87.5
Failed Local Control	3	12.5
Bone Plasmacytoma among failures	3	100
Large Mass (≥5 cm) among failures	3	100
Progression to MM (among failures)	2	66.7

Table 3: Serum M Protein Response

Parameter	Number (n)	Percentage (%)
Patients evaluated	14	—
Undetectable post-treatment	8	57
Detectable post-treatment	6	43

Table 4: Disease Progression & Patterns

Parameter	Number (n)	Percentage (%)
Total progressed to MM	8	33
SBP progressing to MM	7	—
EMP progressing to MM	1	—
Median time to MM (months)	21	Range: 5–96

Table 5: Survival Outcomes

Parameter	Value
Median Follow-up (months)	32 (3–133)
Median EFS (months)	38
Median OS (months)	122
5-year EFS (%)	45.5

Table 6: Prognostic Factors for Progression to MM

Factor	p-value	Significance
Local Control vs No Local Control	0.001	Significant
Vertebral Lesions	0.057	Borderline
Presence of M Protein	0.69	Not Significant
Value of M Protein	0.44	Not Significant
Disappearance of M Protein	0.40	Not Significant

Table 7: Treatment & Outcomes

Parameter	Number (n)	Percentage (%)
Underwent HD Melphalan + Stem Cell Rescue	3	12.5
Total Deaths	3	12.5
Deaths due to disease	2	—
Deaths due to other causes	1	—

Serum M protein was evaluable in 14 patients, of whom 57% achieved complete disappearance following treatment. However, persistence of M protein did not demonstrate prognostic significance (Table 3).During a median follow-up of 32 months (range 3–133 months), 8 patients (33%) progressed to MM, with the majority belonging to the SBP subgroup. The median time to progression was 21 months (Table 4). Survival analysis revealed a median event-free survival (EFS) of 38 months and median overall survival (OS) of 122 months. The 5-year EFS rate was 45.5%, while OS remained favorable. Local control was significantly associated with improved EFS (p = 0.001), though no statistically significant difference in OS was observed (Table 5). Vertebral involvement showed a trend towards increased progression risk (p = 0.057). Neither the presence nor the dynamics of serum M protein had a significant impact on progression (Table 6).Three patients (12.5%) required high-dose melphalan followed by autologous stem cell transplantation upon progression to MM. At the end of follow-up, 3 deaths (12.5%) were recorded, of which 2 were disease-related (Table 7).

Discussion

This study provides insight into the clinicodemographic characteristics, treatment outcomes, and prognostic factors in patients with solitary plasmacytoma. The observed median age of 48 years and male predominance are consistent with previously reported literature, which describes plasmacytoma as a disease of middle-aged individuals with a slight male preponderance[6,7]. The predominance of SBP over EMP in our cohort aligns with established epidemiological patterns[8].Radiotherapy remains the cornerstone of treatment for solitary plasmacytoma, achieving excellent local control rates ranging from 80–95% in multiple series[9,10]. In the present study, the local control rate of 87.5% is comparable to these outcomes, reaffirming the efficacy of RT as definitive therapy. Notably, all cases of local failure were associated with bone lesions and tumor size ≥5 cm, highlighting tumor burden as a critical determinant of treatment outcome. This observation is supported by prior studies identifying lesion size >5 cm as an adverse prognostic factor[11].Progression to multiple myeloma remains the most significant clinical challenge in plasmacytoma management. In our cohort, 33% of patients progressed to MM, which falls within the reported range of 30–60% for SBP and lower rates for EMP[12, 13]. The predominance of progression in SBP compared to EMP further corroborates existing evidence suggesting a more indolent course for EMP[14]. The median time to progression (21 months) is also consistent with previously reported intervals, indicating that the highest risk period lies within the first 2–3 years post-treatment[15].A key finding of this study is the strong association between local control and improved event-free survival. Patients achieving local control demonstrated significantly better EFS, emphasizing the importance of optimal primary treatment. However, no statistically significant difference in overall survival was observed, likely reflecting the effectiveness of salvage therapies and the relatively long natural history of the disease.The prognostic role of serum M protein remains controversial. While some studies suggest persistence of M protein as a predictor of progression, our analysis did not demonstrate a significant association[16, 17]. This may be attributed to the limited number of patients in whom M protein was evaluable or the heterogeneity in disease biology. Similarly, vertebral involvement showed only a borderline association with progression, warranting further investigation in larger cohorts.High-dose chemotherapy with autologous stem cell transplantation was utilized in selected patients who progressed to MM, reflecting current standard practice for eligible patients[18]. The relatively low mortality rate observed in this study underscores the favorable prognosis of plasmacytoma when appropriately managed.Overall, the findings of this study reinforce the importance of early diagnosis, adequate radiotherapy, and close follow-up, particularly in patients with high-risk features such as large tumor size and bone involvement. Future research should focus on molecular and imaging biomarkers to better stratify patients at risk of progression.

Conclusion

Solitary plasmacytoma demonstrates excellent local control with radiotherapy; however, progression to multiple myeloma remains a significant concern, particularly in patients with bone lesions and large tumor size. Achieving local control is a critical determinant of improved event-free survival. Long-term surveillance is essential for early detection of systemic progression.

Funding : Nil

Conflict of Interest : Nil

References

1.**Caers J, Paiva B, Zamagni E, Leleu X, Bladé J, Kristinsson SY, et al.** Diagnosis, treatment, and response assessment in solitary plasmacytoma: updated recommendations. Haematologica. 2018; 103(11):1778–90.

2.**Ozsahin M, Tsang RW, Poortmans P, Belkacémi Y, Bolla M, Dinshaw KA, et al.** Outcomes and patterns of failure in solitary plasmacytoma. RadiotherOncol. 2006;80(2):207–12.

.**Rajkumar SV, Dimopoulos MA, Palumbo A, Blade J, Merlini G, Mateos MV, et al.** International Myeloma Working Group updated diagnostic criteria. Lancet Oncol. 2014;15(12):e538–48.

4.**Tsang RW, Campbell BA, Goda JS, Kelsey CR, Kirova YM, Parikh RR, et al**. Radiation therapy for solitary plasmacytoma. Int J RadiatOncolBiol Phys. 2018;101(4):794–808.

5.**Reed V, Shah J, Medeiros LJ, Ha CS, Mazloom A, Weber DM, et al**. Solitary plasmacytomas: outcome and prognostic factors. Cancer. 2011;117(19):4468–74.

6.**Dimopoulos MA, Moulopoulos LA, Maniatis A, Alexanian R**. Solitary plasmacytoma of bone and asymptomatic multiple myeloma. *Blood*. 2000;96(6):2037–2044.

7.**Soutar R, Lucraft H, Jackson G, Reece A, Bird J, Low E, et al**. Guidelines on the diagnosis and management of solitary plasmacytoma of bone and solitary extramedullary plasmacytoma. *Br J Haematol*. 2004;124(6):717–726.

8.**Kilciksiz S, Karakoyun-Celik O, Agaoglu FY, Haydaroglu A**. A review for solitary plasmacytoma of bone and extramedullary plasmacytoma. *RadiotherOncol*. 2008;87(3):309–317.

9.**Tsang RW, Campbell BA, Goda JS, Kelsey CR, Kirova YM, Parikh RR, et al.** Radiation therapy for solitary plasmacytoma and multiple myeloma: Guidelines from the International Lymphoma Radiation Oncology Group. *Int J RadiatOncolBiol Phys*. 2018;101(4):794–808.

10.**Ozsahin M, Tsang RW, Poortmans P, Belkacemi Y, Bolla M, Dinshaw KA, et al**. Outcomes and patterns of failure in solitary plasmacytoma: A multicenter Rare Cancer Network study of 258 patients. *RadiotherOncol*. 2006;80(2):186–191.

11.**Liebross RH, Ha CS, Cox JD, Weber D, Delasalle K, Alexanian R.** Solitary bone plasmacytoma: Outcome and prognostic factors following radiotherapy. *J ClinOncol*. 1998;16(4):1573–1577.

12.**Knobel D, Zouhair A, Tsang RW, Poortmans P, Belkacemi Y, Bolla M, et al**. Prognostic factors in solitary plasmacytoma of the bone: A multicenter Rare Cancer Network study. *Int J RadiatOncolBiol Phys*. 2006;64(1):210–217.

13,**Wilder RB, Ha CS, Cox JD, Weber D, Delasalle K, Alexanian R**. Persistence of myeloma protein in patients treated for solitary plasmacytoma of bone: Prognostic significance. *Cancer*. 2002;94(5):1532–1537.

14.**Susnerwala SS, Shanks JH, Banerjee SS, Scarffe JH, Farrington WT, Slevin NJ**. Extramedullary plasmacytoma of the head and neck region: Clinicopathological correlation in 25 cases. *RadiotherOncol*. 1997;43(3):283–288.

15.**Holland J, Trenkner DA, Wasserman TH, Fineberg B.** Plasmacytoma: Treatment results and conversion to myeloma. *Cancer*. 1992;69(6):1513–1517.

16.**Dingli D, Kyle RA, Rajkumar SV, Nowakowski GS, Larson DR, Bida JP, et al**. Immunoglobulin free light chains and solitary plasmacytoma of bone. *Leukemia*. 2006;20(11):1992–1995.

17.**Paiva B, Vidriales MB, Pérez JJ, Mateo G, Montalbán MA, Sureda A, et al.** Multiparameter flow cytometry quantification of bone marrow plasma cells at diagnosis provides more prognostic information than morphological assessment in myeloma. *Blood*. 2014;124(20):3059–3067.

18.**Attal M, Harousseau JL, Stoppa AM, Sotto JJ, Fuzibet JG, Rossi JF, et al**. A prospective, randomized trial of autologous bone marrow transplantation and chemotherapy in multiple myeloma. *N Engl J Med*. 1996;335(2):91–97.